offspring to be albinos. As reported by Marcovaldi et al. (this issue), 22.4% of the total number of hatchlings (22 of 98) that emerged from the nest were albinos. Assuming equal mortality for all genotypes in the nest, the percentage of surviving albinos in this clutch is consistent with the suggestion that there was only one father. Previous studies have indicated that multiple paternity is a major feature of reproduction in sea turtle populations (Harry and Briscoe 1988; Peare et al. 1994). Perhaps populations differ in their patterns of reproductive behaviour.

Another issue concerns the pleiotropic effects of albinism. Pathways from the retina to the brain are known to be abnormally routed in albinos of some species (Guillery 1986). Seafinding by turtles is thought by some to depend on a complex phototropotactic system involving differential stimulation of various parts of the visual system (Mrosovsky et al. 1979). The albino hatchlings may appear normal, but it would be interesting to test whether or not their seafinding ability is compromised. Tests with unilaterally blindfolded albino hatchlings might be instructive.

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AN UPDATE OF SAMPLE SEX COMPOSITION DATA FOR HEAD STARTED KEMP'S RIDLEY SEA TURTLES

The primary goal of the Kemp's ridley sea turtle (Lepidochelys kempii) head start experiment was to establish a nesting colony at the Padre Island National Seashore near Corpus Christi, Texas through imprinting, captive-rearing and release, as a back-up to the primary nesting beach near Rancho Nuevo, Tamaulipas, Mexico (Woody 1986, 1989). When the experiment began in 1978, the pivotal incubation temperature (that which produces a 1M:1F sex ratio) for Kemp's ridley was unknown, and this lack of knowledge persisted until 1985 (Shaver et al. 1988). Shaver et al. (1988) and Wibbels et al. (1989) determined sample sex ratios of head started Kemp's ridley year-classes 1978-1979 and 1981-1988. No data were available from the 1980 year-class. This paper extends the series by adding sample sex composition data from the 1989-1992 year-classes.

Because Kemp's ridley is critically endangered, specimens could not be sacrificed for determination of gender. Readers are cautioned that the available sex composition data could be biased by variations among clutches, ages and sample sizes within and among year-classes (Wibbels et al. 1989). Additional biases may have been introduced by the different methods used to determine gender, which included gross and histological examination of gonads in turtles that died during captive-rearing, testosterone titer in live juveniles, and laparoscopy in larger live turtles held for more than one year (Wibbels et al. 1989). Histological examination of excised gonads was used to determine gender of turtles of the 1989-1992 year-classes that died during captive-rearing. The stage of decomposition of gonads in turtles that died could have influenced sex determination. Therefore, the data in Table 1 should be viewed only as approximations of the sex composition of head started Kemp's ridley year-classes.

Table 1. Sample sex composition data for captive-reared Kemp's ridleys, by year-class [a].

Year-class	Males	Females	% Female	No. turtles released [b]
1978	21	11	34.4	2018
1979	13	9	40.9	1363
1981	0	4	100.0	1639
1982	64	30	31.9	1324
1983	6	6	50.0	190
1984	114	46	28.8	1017
1985	73	85	53.8	1534
1986	9	44	83.0	1630
1987	2	534	99.6	1230
1988	13	36	73.5	808
1989	1	54	98.2	1894
1990	1	35	97.2	1979
1991	2	27	93.1	1943
1992	1	22	95.7	1963

[a] No data were available for 1980. Data for 1978-1979 and 1981-1988 were obtained from Shaver et al. (1988), Wibbels et al. (1989) and Donna J. Shaver (FWS, Natl. Biological Survey, pers. comm., January 1994). Data for 1989-1992 were based on histological examination of gonads excised from turtles that died during captive-rearing.

[b] Turtles released in the calendar year following the one in which they were received as hatchlings for the head start experiment. Not shown are 1723 turtles of the 1980 year-class that were released.

Hatchlings of the 1978-1988 year-classes were obtained for the head start experiment either directly from Rancho Nuevo or from eggs collected at Rancho Nuevo without exposure to the local beach sand (see Caillouet 1995). Eggs from Rancho Nuevo were collected in plastic bags as they were laid, packed in Styrofoam™ boxes containing sand from the Padre Island National Seashore near Corpus Christi, Texas, and transferred to the National Seashore for incubation and hatching in the same boxes (Shaver et al. 1988; Burchfield and Foley 1989). The hatchlings were then allowed to crawl over the sand to the surf at Padre Island in hopes of imprinting them before they were transferred to the National Marine Fisheries Service's Galveston Laboratory in Galveston, Texas for captive-rearing (Shaver et al. 1988; Fontaine et

al. 1989; Shaver 1989). Hatchlings obtained directly from Rancho Nuevo came from eggs collected from natural nests and incubated in artificial nest cavities dug in beach sand within protected corrals at Rancho Nuevo (no data were available concerning incubation temperatures of these nests). The Padre Island incubation phase of the experiment terminated in 1988 (Shaver 1989, 1990), after which all hatchlings of the 1989-1992 year-class were obtained directly from Rancho Nuevo. The captive-rearing phase of the head start experiment ended with release of the 1992 year-class (Byles 1993).

Until 1985, the pivotal temperature for incubation of Kemp's ridley eggs was unknown (Shaver et al. 1988; Fletcher 1989). Beginning in 1985, the National Park Service increased incubation temperature to increase the proportion of females emerging from eggs incubated at Padre Island (Fletcher 1989). Except for the female-dominated sample of four turtles from the 1981 year-class and the 1M:1F sex ratio of the sample of 12 turtles from the 1983 year-class, the samples from year-classes through 1984 were male-dominated (Table 1). Samples from the 1985-1992 year-classes were female-dominated. Sample estimates of the percentage of females from each year-class are only as good as the original data, which admittedly are biased (Wibbels et al. 1989). However, the shift to female-dominance probably was real (Table 1).

The total numbers of turtles tagged and released into the Gulf of Mexico from each year-class are also given in Table 1, but readers are cautioned that expansion of the sample percentages of females to total females (or males) released by year-class would also produce biased results. The sample sex composition of year-classes 1989-1992 in which all of the hatchlings were obtained directly from Rancho Nuevo also should not be considered representative of the distribution of sexes among hatchlings released into the Gulf of Mexico at Rancho Nuevo shortly after hatching.

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NATIONAL MEXICAN TURTLE CENTER

For centuries marine turtles have figured prominently in Mexican culture, especially of native coastal communities, and provided a significant part of the livelihood of a large number of coastal fishermen. Recently a combination of factors, including unlimited exploitation (which rose during the second half of the present century due to commercial demands, such as for leather in international markets), the low percentage of hatchlings which survive to adulthood, and environmental degradation (e.g., coastal tourism and industrial developments), have resulted in the turtles becoming endangered in Mexico. In search of conservation alternatives for these prehistoric species, the Mexican Federal Government announced on 24 September 1991 (Part 8, "Codigo de Ensenada" Decree) the creation of a Live Turtle Museum to serve as an institutional focal point to coordinate conservation, research, and protection efforts. As a result, the National Mexican Turtle Center was built in Mazunte, Santa Maria Tonameca county, Oaxaca. The Center is administratively part of the Instituto Nacional de la Pesca (Secretaria de Pesca), located ca. 900 km south of Mexico City (Figure 1).

The objectives of the new facility are (a) to disseminate knowledge about the biology and conservation of marine turtles, and the laws that protect them, (b) to promote scientific and technological research for the handling, husbandry, and conservation of turtles, (c) to promote ecological tourism in the region, and (d) to support the development and growth of the region's communities. The Center is composed of four public areas, as well as research laboratory space. The Exhibition Area features an aquarium hall of circular design with 13 aquariums exhibiting various life history stages (hatchlings, juveniles, adults) of the sea turtles that live in our country. Three aquariums exhibit six of the most common freshwater turtles and two